The Development of Cascade and Chinook Fields in Gulf of Mexico

Cesar Palagi
Walker Ridge Asset Manager
Petrobras
Houston, Texas

OCS Policy Committee Meeting

Herndon, Virginia

March 5, 2008

PETROBRAS

Agenda

1 - Introduction

2 - Cascade and Chinook – Phase 1

3 - Cascade and Chinook – Phases 2 and 3

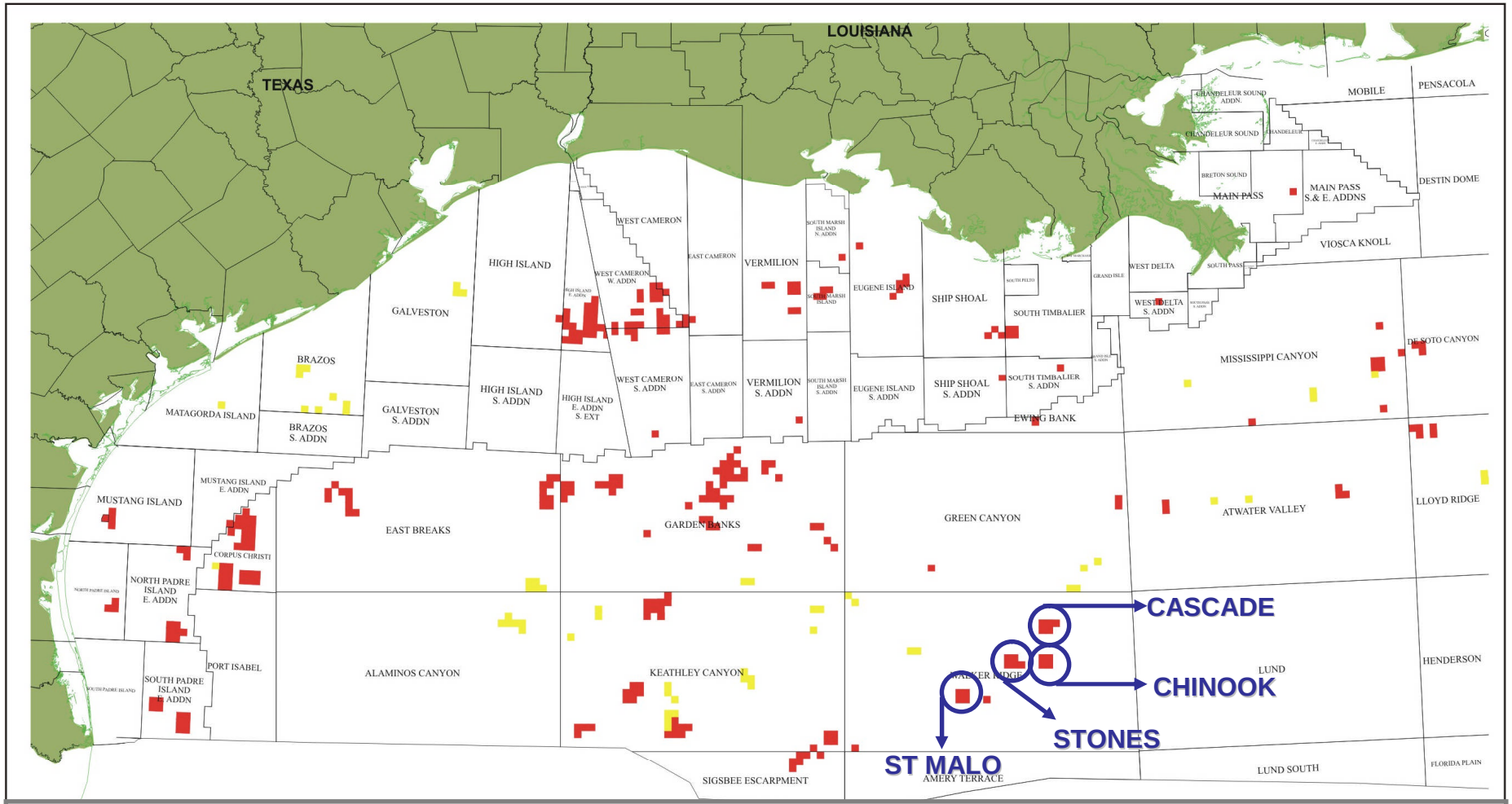
4 - Conclusions

Introduction

PETROBRAS

Cascade & Chinook Phase 1 - Movie

Petrobras – E&P Portfolio in Gulf of Mexico



Lease Sale OCS 204

- 34 blocks
- 13 in shallow waters
- 21 in deep waters
- 20 PBR as operator

Lease Sale OCS 205

- 26 blocks
- 26 in deep waters
- 22 PBR as operator

- 347 blocks offshore
- 148 in shallow waters
- 199 in deep waters
- 186 PBR as operator

Cascade and Chinook - Recent History

- August, 2006 - UNIT and SOP for Cascade and Chinook were approved by MMS;
- November, 2006 - the Conceptual Plan was approved by MMS;
- February, 2007 - the bid processes for equipments, goods and services were started;
- May, 2007 - the Deep Water Operations Plan (DWOP) was submitted to MMS;
- June, 2007 - the Development Operations Coordination Document (DOCP) was submitted to MMS;
- 4th Quarter 2007 – Major subsea, FPSO and Shuttle contracts were awarded.

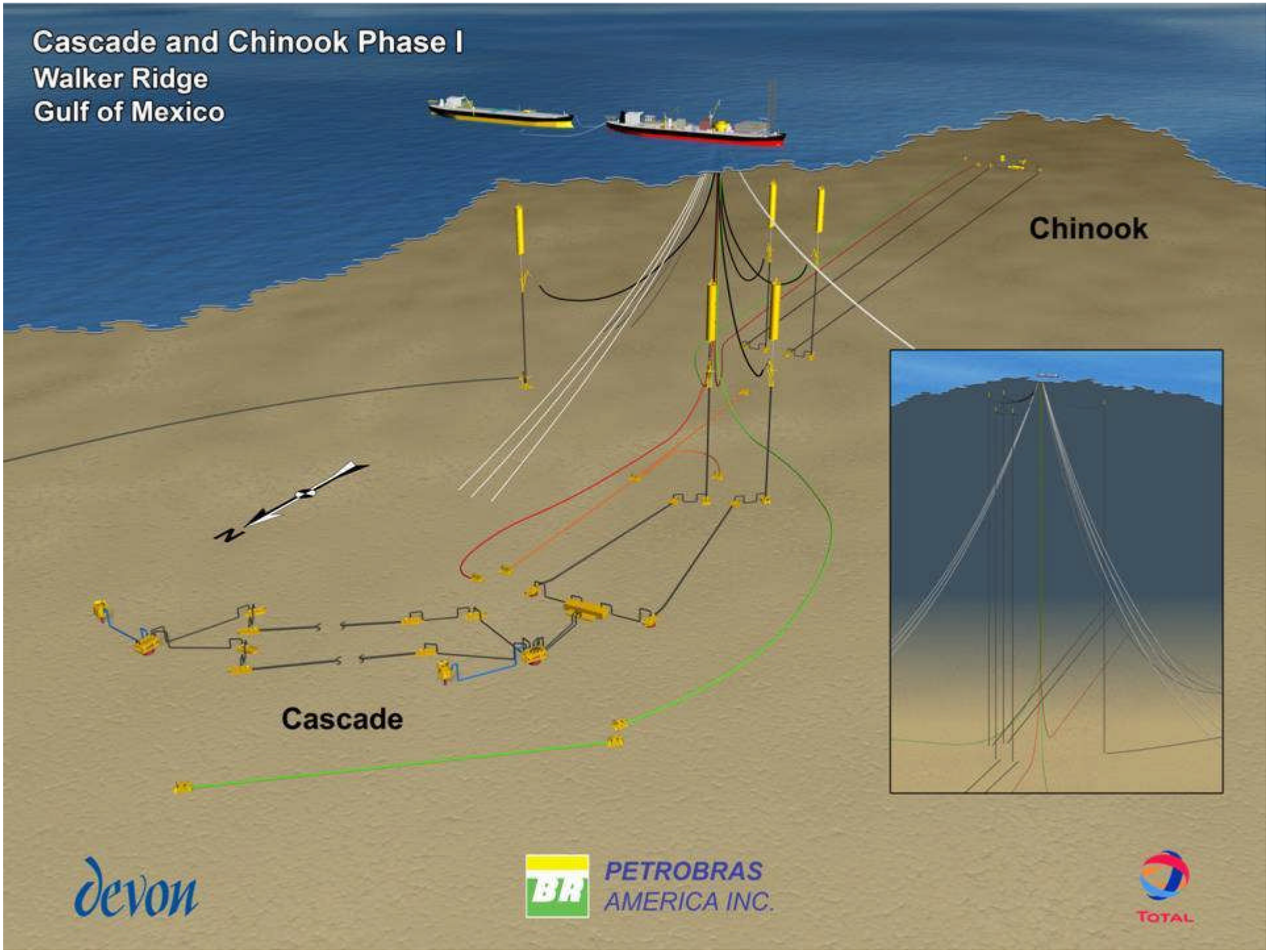
Cascade and Chinook Phases 1 of Development

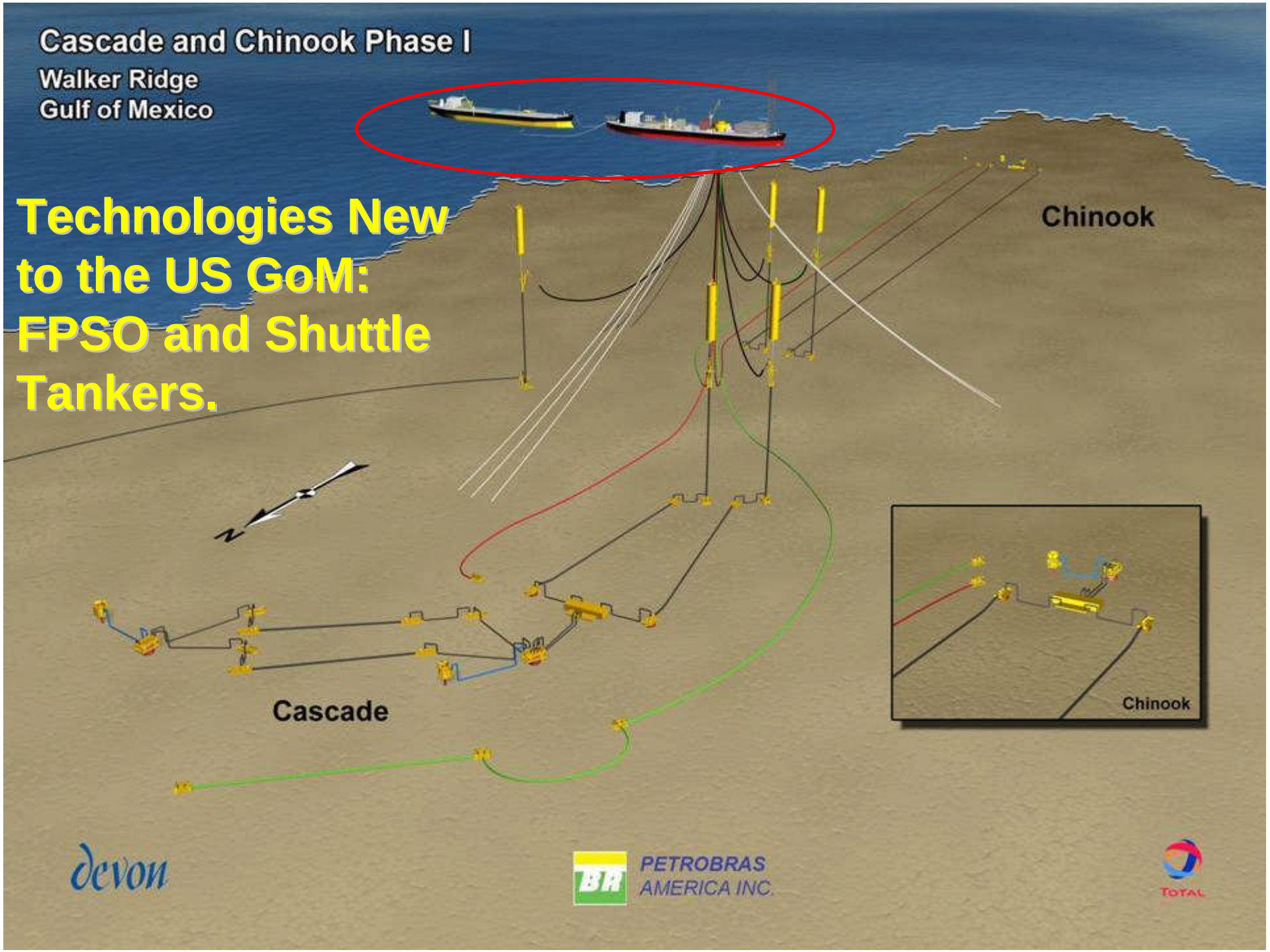
PETROBRAS

Phase 1 - Objectives

The Objective of Cascade and Chinook Phase 1 is to obtain data and information about the reservoirs and the well productivity in order to optimize the future phases focusing on the following aspects:

- Number and type of wells;
- Completion design;
- Production System Type and Capacity;
- Subsea Layout and Boosting System;
- Secondary Recovery Potential.


Cascade and Chinook Phase I
Walker Ridge
Gulf of Mexico
Chinook
Cascade
devon
PETROBRAS
AMERICA INC.
TOTAL

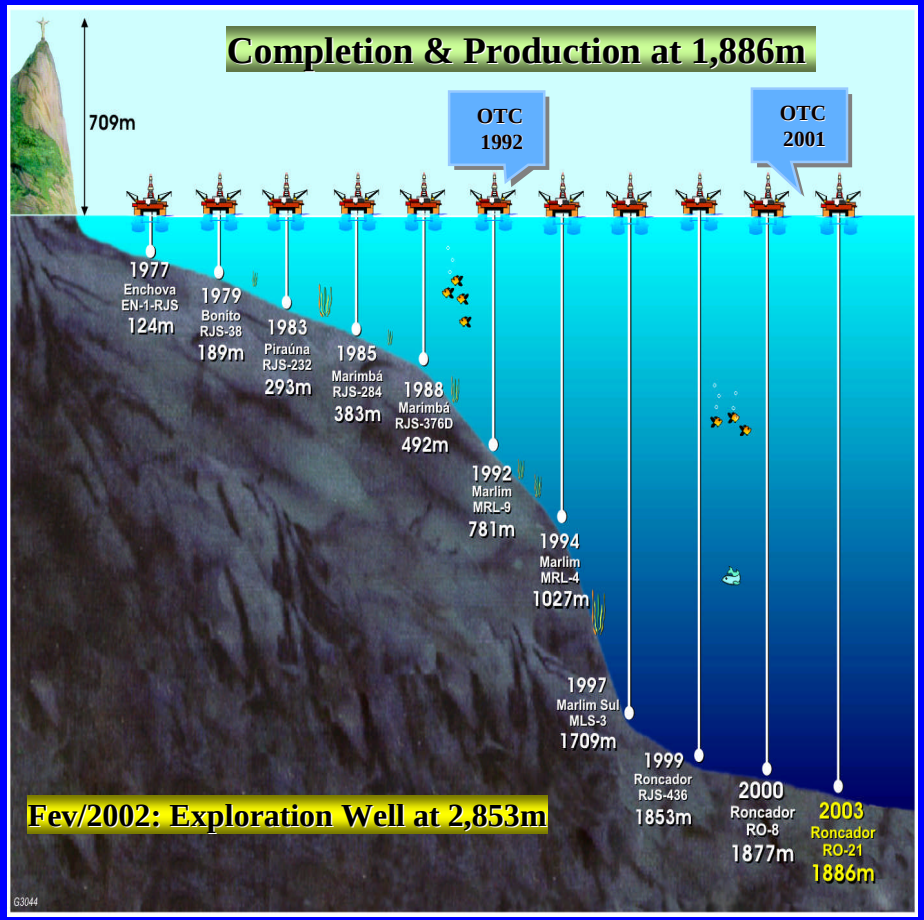

Cascade and Chinook Phase I
Walker Ridge
Gulf of Mexico
Technologies New to the US GoM: FPSO and Shuttle Tankers.
Chinook
Cascade
Chinook
devon
PETROBRAS AMERICA INC.
TOTAL

FPSO - Main Particulars

Storage Capacity	Min. 500,000 bbl
Production (Max)	80,000 bpd
Minimum (for performance)	3,000 bpd
Produced Water (BSW = 20%)	16,000 bpd
Gas (GOR 200)	460,000 Nm^3/d
Test Separator	10,000 bpd
Oil API range (w/ 10.3 ppmv H_2S)	18 to 26
Gas Export (Op. pressure)	172 barg

Petrobras as an Operator of Offshore Fields in Brazil

Petrobras' Records

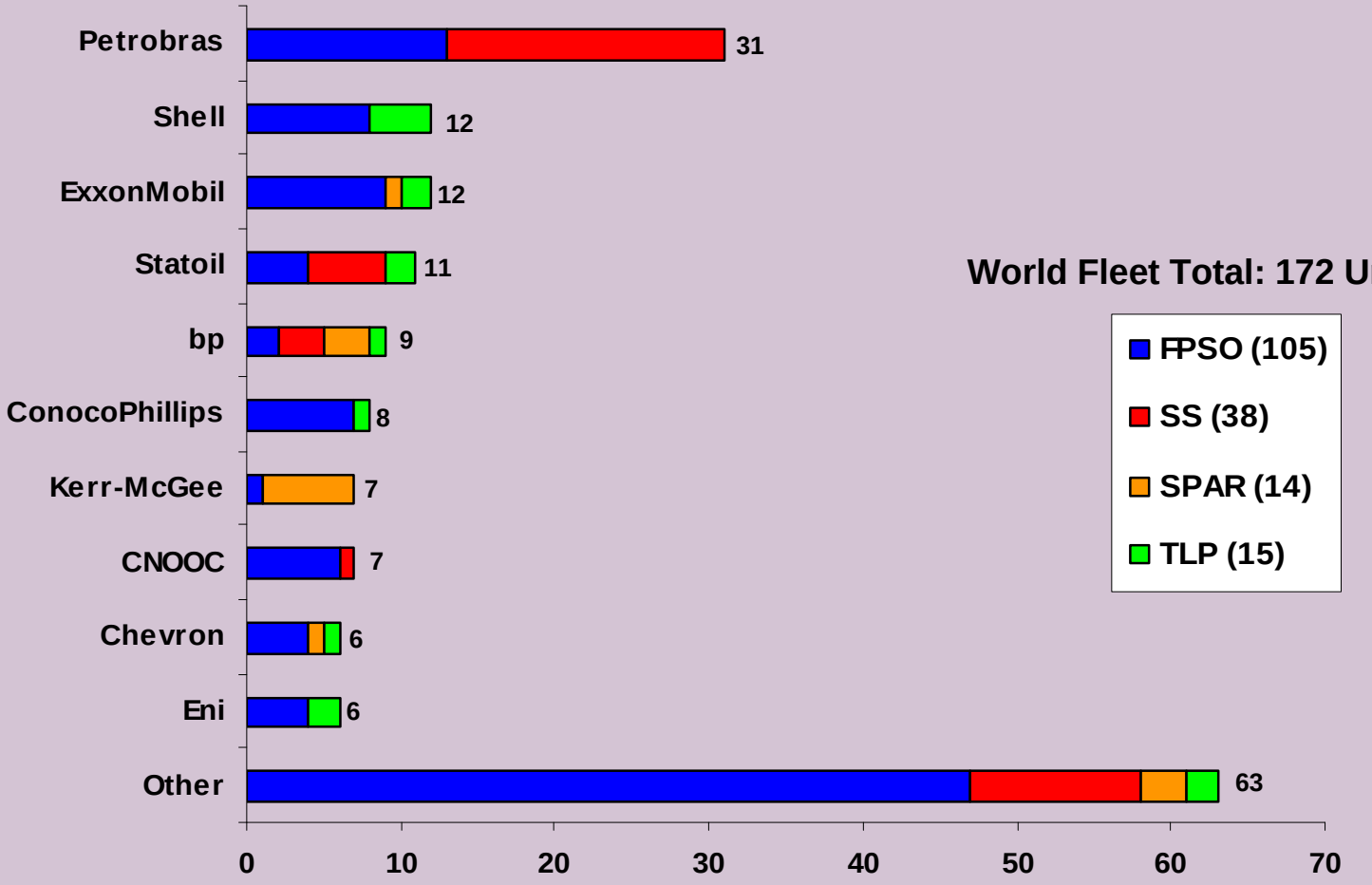


Petrobras' Offshore Facilities

Equipment	Installed Dec/2006	Planned (2007)
Subsea Trees	608	40
Subsea Manifolds	60	-
Subsea Flexible Flowlines (km)	3,200	400
Umbilicals (km)	1,900	200
Rigid Pipelines (km)	1,857	275
Floating Production Units	28	4
Monobuoys	3	-

SOURCE: PETROBRAS DOMESTIC E&P RESULTS AND PERSPECTIVES, FEB 2007

Petrobras as an Operator of Floating Production Units.



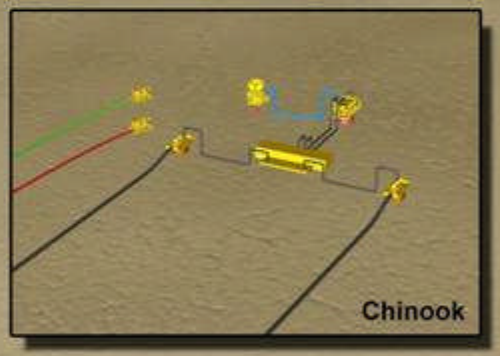
Source: © 2006 Quest Offshore Resources

Cascade and Chinook Phase I

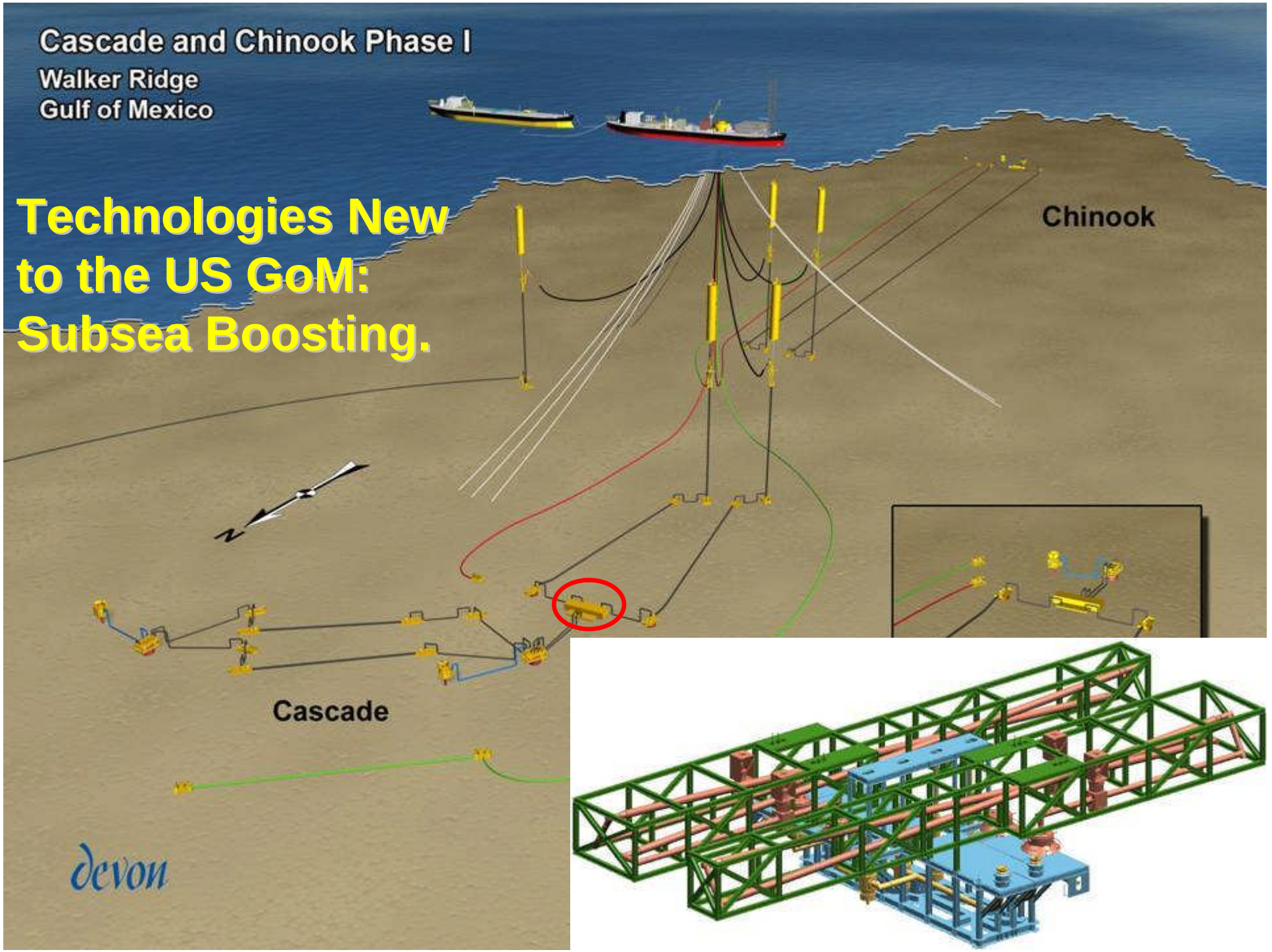
Walker Ridge
Gulf of Mexico

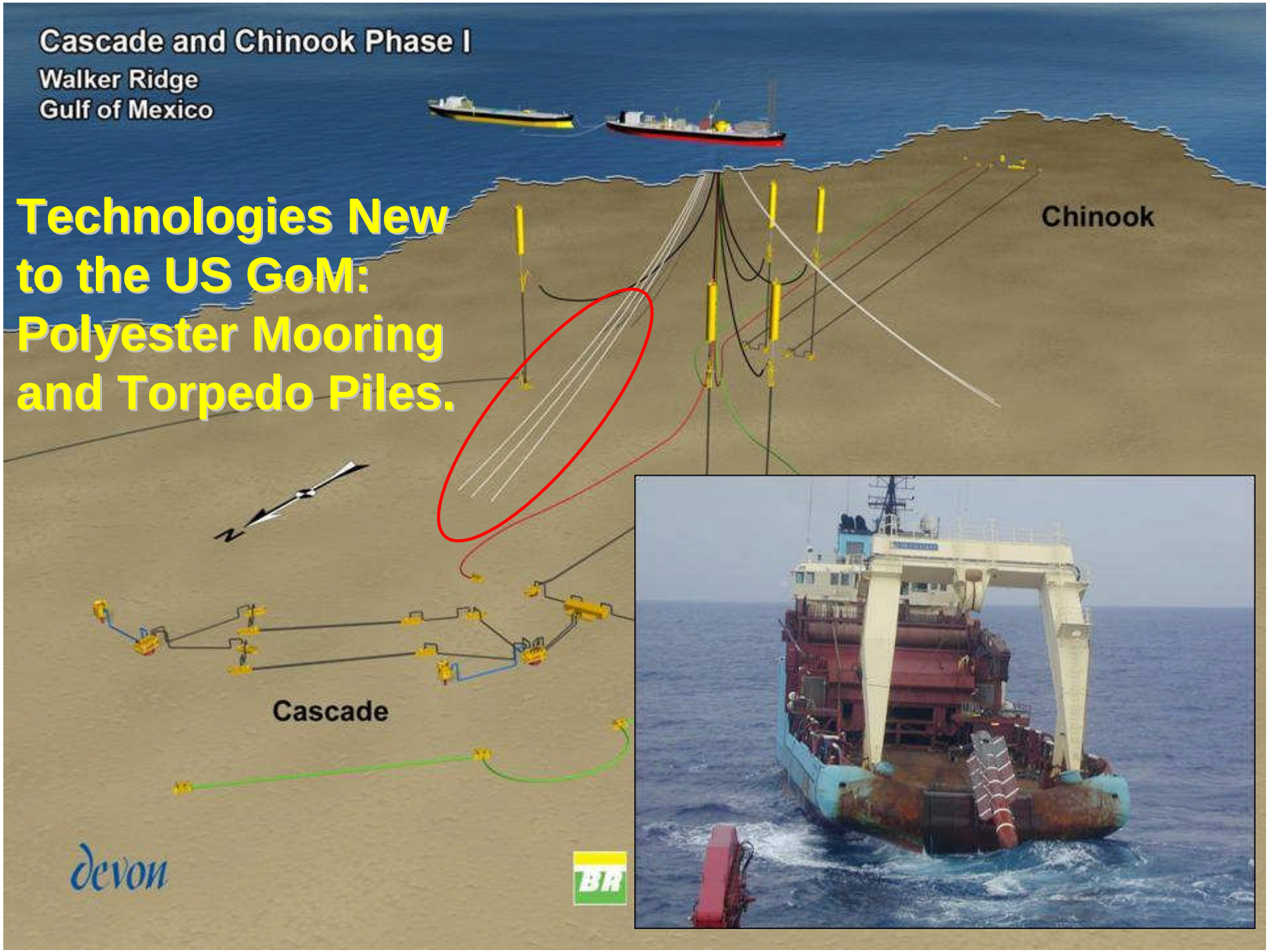
Technologies New to the US GoM: Free Standing Hybrid Riser.

Chinook



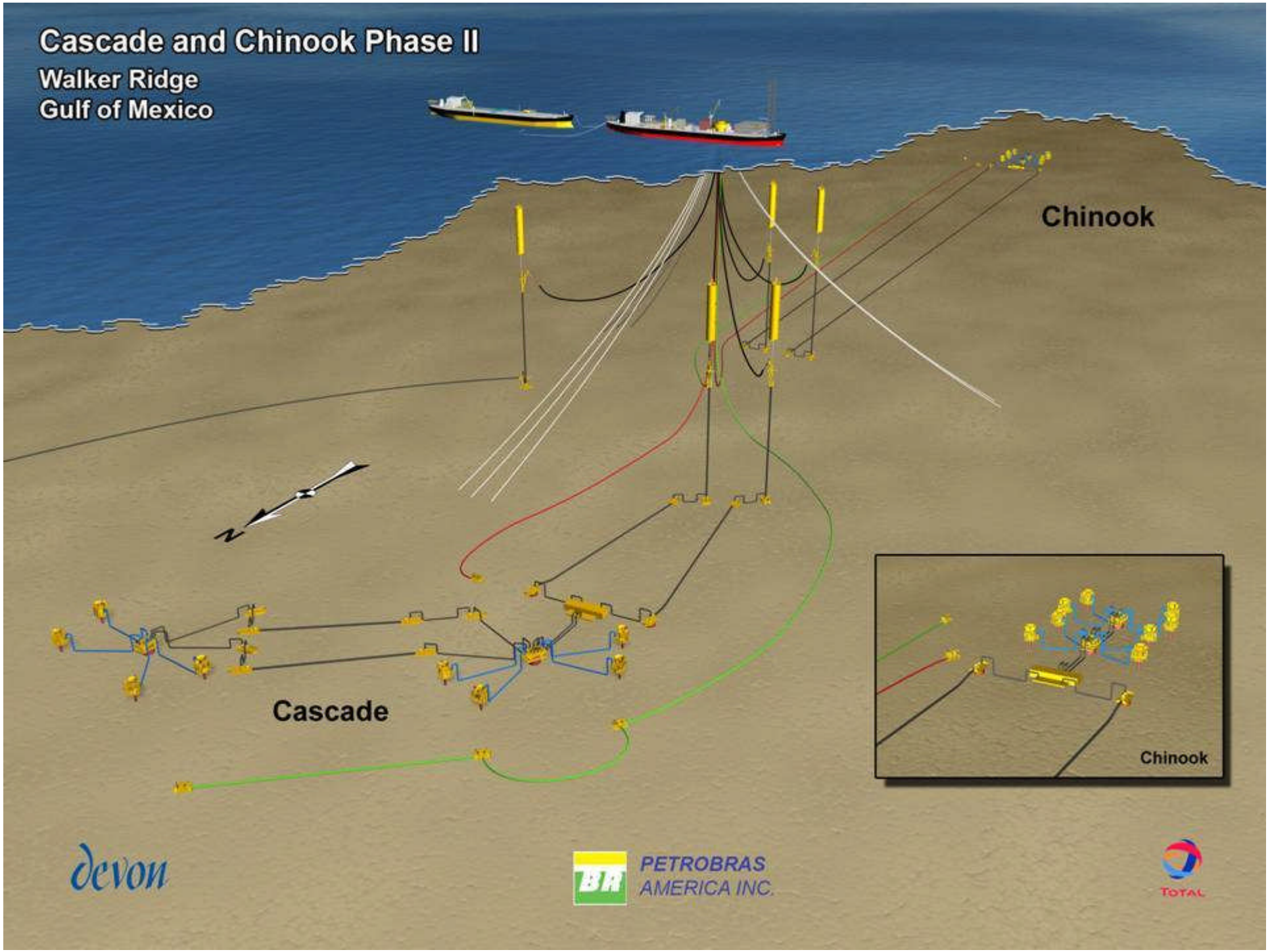
TOTAL

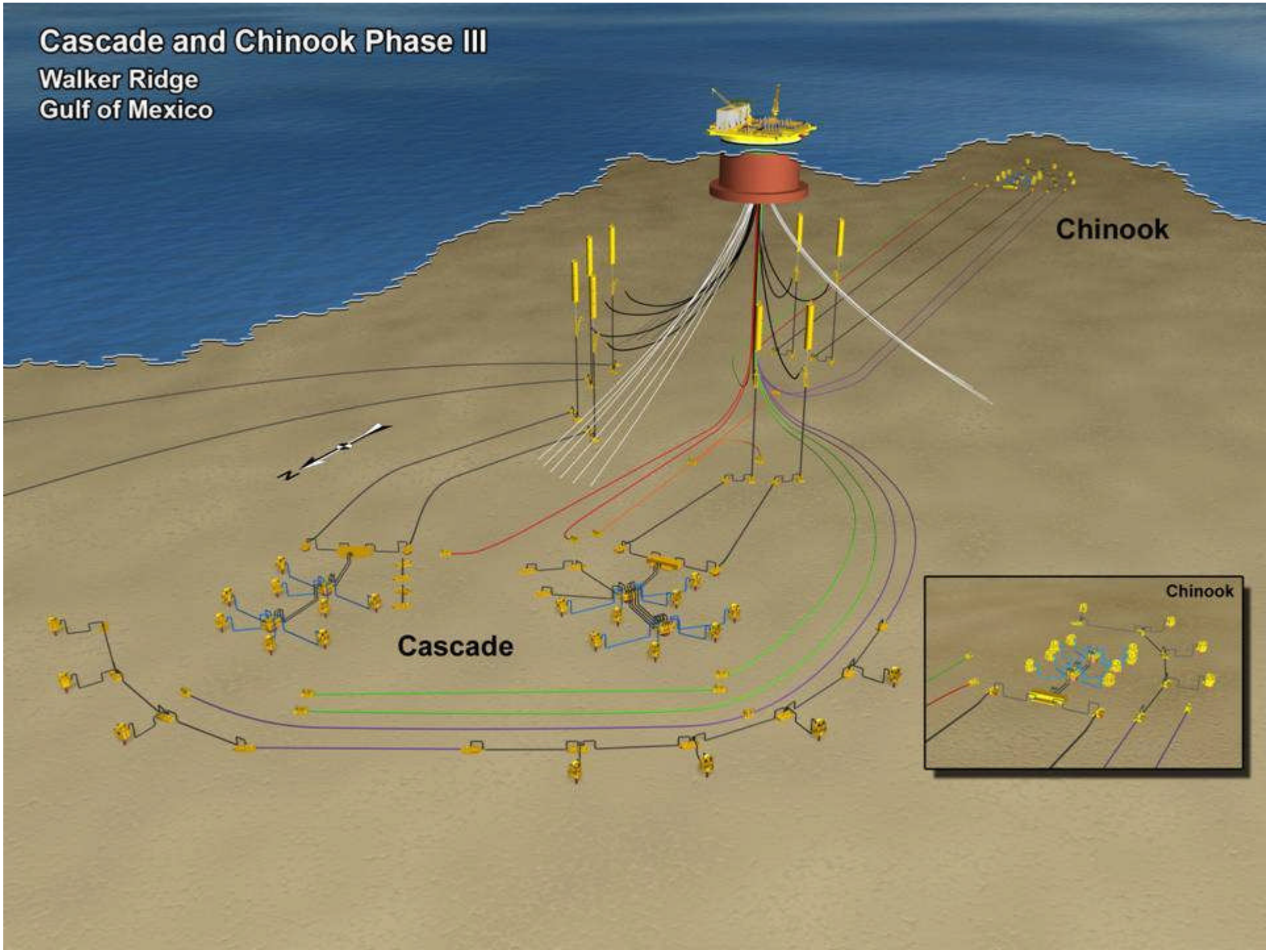

Cascade and Chinook Phase I
Walker Ridge
Gulf of Mexico
Technologies New to the US GoM: Subsea Boosting.
Chinook
Cascade
devon


Cascade and Chinook Phase I
Walker Ridge
Gulf of Mexico
Technologies New to the US GoM: Polyester Mooring and Torpedo Piles.
Chinook
Cascade
devon
BP

Cascade and Chinook Phases 2 and 3 of Development

PETROBRAS


Cascade and Chinook Phase II
Walker Ridge
Gulf of Mexico
Chinook
Cascade
Chinook
devon
PETROBRAS
AMERICA INC.
TOTAL


Cascade and Chinook Phase III
Walker Ridge
Gulf of Mexico
Chinook
Cascade
Chinook

Conclusions

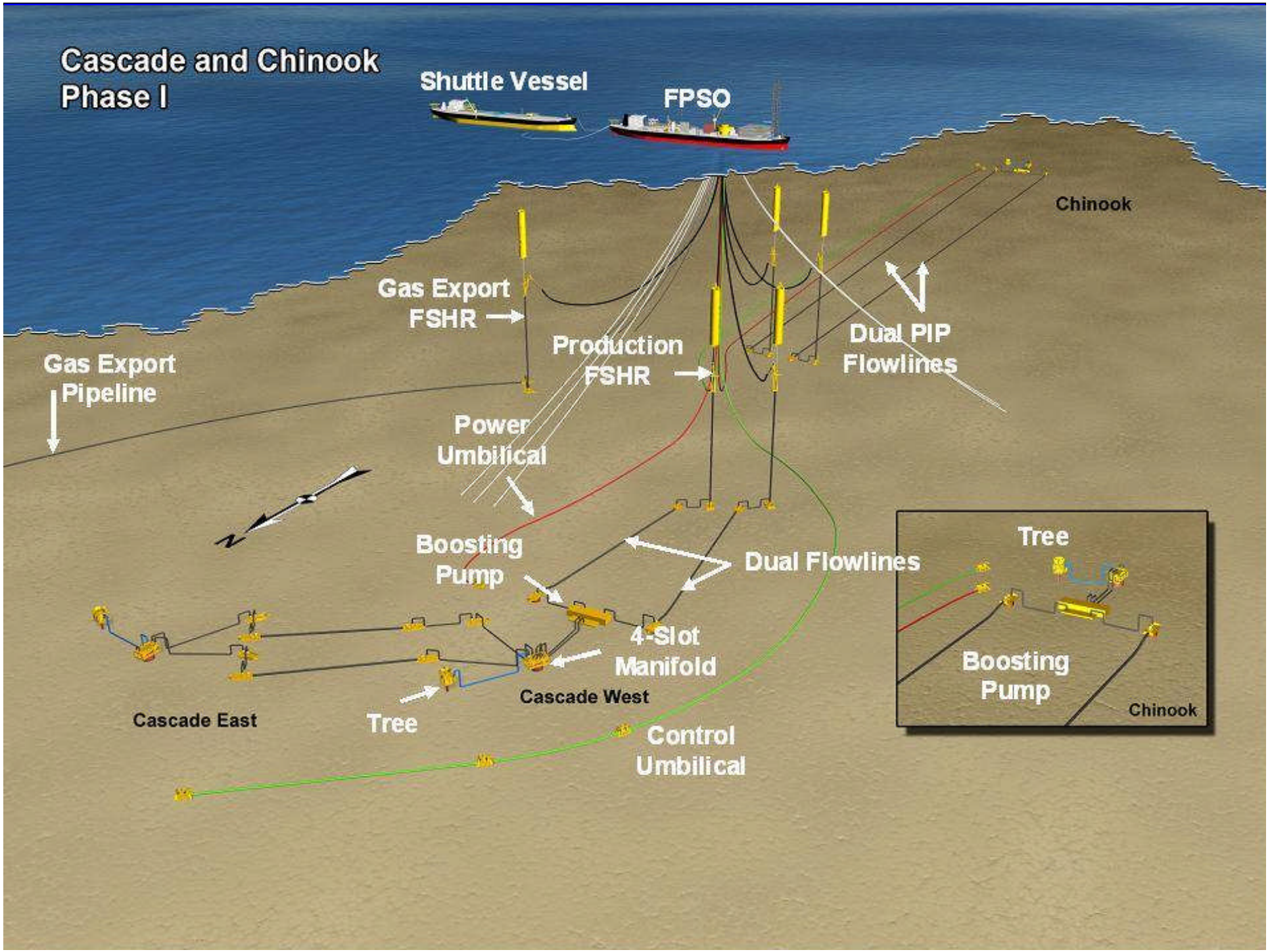
- Phased development approach is suitable to deal with the uncertainties of the Lower Tertiary play in GoM;
- Disconnectable FPSOs provide a means to improve protection of life, environment and assets during GoM hurricanes;
- The development of ultra-deep water Lower Terciary fields will require the application of technologies that are new to the US GoM.

PETROBRAS

Thank You !

Cesar Palagi
Petrobras, Houston TX
E-mail: cpalagi@petrobras-usa.com
Phone: 713 808 5041

PETROBRAS


Cascade and Chinook
Phase I
Shuttle Vessel
FPSO
Chinook
Gas Export
FSHR
Production
FSHR
Dual PIP
Flowlines
Gas Export
Pipeline
Power
Umbilical
Boosting
Pump
Dual Flowlines
Tree
Boosting
Pump
Chinook
4-Slot
Manifold
Cascade West
Cascade East
Tree
Control
Umbilical

Oil Export Through Shuttle Tankers